

Appl. No. 09/137,393
Amdt. Dated August 29, 2005
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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-29 (canceled)

Claim 30. (currently amended) A golf ball comprising:

(a) a core; and
(b) a cover formed ~~essentially free of catalysts over~~
~~said core in a single molding operation by casting~~
into a golf ball mold with dimples, that when cured at room temperature said cover has a Shore D hardness of 50D to 65D, ~~wherein said cover is produced through a mixture having a stoichiometry of 92 to 105%~~
comprising

(1) a diisocyanate;

(2) a polyol having a molecular weight of about 650-3000 wherein the diisocyanate and the polyol when ~~mixed~~ reacted into a prepolymer have an NCO% content by weight from ~~about~~ 5.5% to ~~about~~ 8.0% of the prepolymer; and,

(3) a curing agent blend consisting of:

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(A) a first diamine having sterically or electronically hindered amine groups; and,

(B) a second diamine having unhindered diamine groups wherein said cover is produced through a mixture having a stoichiometry of 92 to 105% of prepolymer to curative.

Claim 31. (previously presented) The golf ball of claim 30 wherein the diisocyanate is selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and mixtures thereof.

Claim 32. (previously presented) The golf ball of claim 30 wherein the diisocyanate is toluene diisocyanate, the polyol is polyoxytetramethylene ether glycol forming a prepolymer having an NCO content of about 6%, which when mixed with the curing agent forms a pot life of 55-70 seconds.

Claim 33. (previously presented) The golf ball of claim 30 wherein the first diamine is dimethylthio-2,4-toluenediamine.

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Claims 34-35 (Canceled)

Claim 36. (previously presented) The golf ball of claim 30 wherein the core is comprised of cis polybutadiene rubber.

Claim 37 (currently amended) The golf ball of claim 36 wherein the core comprises a center made from cis polybutadiene rubber and thread windings, wherein the core has having an initial compression value and a post cure compression value that is ~~about the same value as~~ not less than the initial compression value.

Claim 38. (previously presented) The golf ball of claim 37 wherein the center has a diameter from about 1.40" to about 1.53".

Claim 39. (previously presented) The golf ball of claim 30 wherein the second diamine is diethyl-2,4-toluenediamine.

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Claim 40. (currently amended) A golf ball comprising:

a core, comprising a center and thread layer wherein said core has a diameter from about 1.48" to about 1.62"; and,

a polyurethane cover free of catalysts having a Shore D hardness of 50D to 65D formed from a mixture of reactants poured into at least one pair of mating mold halves, wherein the mixture of reactants produce a semi-gelled polyurethane, wherein the core is introduced into at least one of the pair of mating mold halves containing the semi-gelled polyurethane, which after waiting approximately four minutes ~~can be~~ is removed and cured at room temperature, wherein the reactants comprise:

(a) (1) a diisocyanate selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, isophorone diisocyanate and mixtures thereof, and

(2) a polyol having a molecular weight of about 650-3000; and,

(b) a curing agent comprising:

(1) dimethylthio-2,4-toluenediamine; and,

(2) diethyl-2,4-toluenediamine.

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Claim 41. (previously presented) The golf ball of claim 40 wherein the polyol is polyoxytetramethylene ether glycol.

Claim 42. (canceled)

Claim 43. (currently amended) A polyurethane ~~golf ball~~
~~molding assembly~~ article comprising:

a core;

at least one pair of mating mold halves wherein the mold halves produce finished golf balls;

a cast golf ball cover disposed over the core formed from a mixture poured into the pair of mating mold halves, the mixture when cured having a Shore D hardness of 50D to 65D wherein the mixture comprises a prepolymer of a diisocyanate and a polyol with that has an NCO content of about 5.5% to 8.0% by weight and the prepolymer is combined with a curative comprising diethyl-2,4-toluenediamine and dimethylthio-2,4-toluenediamine, which are mixed and poured into the pair of mating mold halves forming a semi-gelled polyurethane, wherein the core is inserted into the semi-gelled polyurethane and the core is completely engulfed by

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the semi-gelled polyurethane when the pair of mating mold halves are joined.

Claim 44. (currently amended) A cast polyurethane golf ball article ~~molding system~~ comprising:

(a) a core; and

(b) a cover having a Shore D hardness of 50D to 65D after curing for 8 to 16 hours at room temperature, said cover being a polyurethane formed from a mixture of reactants comprising:

(1) a diisocyanate selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and mixtures thereof;

(2) a polyol, wherein said polyol has a molecular weight of about 650-3000; and,

(3) a curing agent comprising:

(A) a first diamine substituted benzene ring wherein said first diamine substituted benzene ring has amine groups which are sterically or electronically hindered; and,

(B) a second diamine substituted benzene ring having no interference with its amine group, wherein said first diamine substituted benzene ring has greater

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hindrance of its amine group than said second diamine substituted benzene ring's amine group;

(c) at least one pair of mating mold halves wherein said mold halves produce finished golf balls, wherein the mixture of reactants is poured into the pair of mating mold halves the core is inserted engulfing the core in the mixture that is capable of being cured at room temperature after removal from the mating mold halves.

Claim 45. (currently amended) The ~~golf ball~~ article according to claim 44 wherein said first diamine substituted toluene is dimethylthio-2,4-toluenediamine.

Claim 46. (currently amended) The article ~~golf ball~~ according to claim 44 wherein said second diamine substituted toluene is diethyl-2,4-toluenediamine.

Claim 47. (currently amended) The ~~golf ball~~ article according to claim 45 wherein said second substituted toluene diamine is diethyl-2,4-toluenediamine.

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Claim 48. (previously presented) A golf ball comprising:

a core;

a cover comprising a blend of:

(a) a polyurethane prepolymer comprising:

(1) a diisocyanate having a benzene ring group;

(2) a polyol;

(b) a curing agent comprising:

(1) a benzene ring having a hindered diamine;

and,

(2) a benzene ring having an unhindered diamine;

wherein the polyurethane prepolymer and curing agent are cured at about 72° F to about 102°F, and a post-cure time for the golf ball is between about 8 to 16 hours.

Claim 49. (previously presented) The golf ball of claim 48 wherein said cover blend has a pot life of 55-70 seconds.

Claim 50. (previously presented) The golf ball of claim 48 wherein said polyol is an ether glycol.

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Claim 51. (previously presented) The golf ball of claim 48 wherein said diisocyanate is selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and mixtures thereof.

Claim 52. (previously presented) The golf ball of claim 51 wherein the polyol is polyoxytetramethylene ether glycol.

Claim 53 (currently amended) The golf ball of claim 48 wherein the core comprises a center and a thread winding layer, wherein the thread winding layer is sprayed with a liquid that reacts into a polyurethane based liquid.

Claim 54 (currently amended) A golf ball having a cast polyurethane cover formed in a single golf ball mold ~~molding operation cycle~~ comprising:

a core; and,

a cast polyurethane cover having a Shore D hardness of about 50D to 65D and a flexural modulus that falls within the range of about 15,000 PSI to about 30,000 PSI, the cover comprising a mixture of:

(a) a prepolymer comprising:

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- (1) a diisocyanate; and,
 - (2) a polyol, wherein said diisocyanate and said polyol have ~~about~~ 5.5% to 8.0% by weight of NCO% content when reacted as a prepolymer;
- (b) a curing agent blend comprising:
- (1) a first diamine substituted toluene having amine groups that are sterically or electronically hindered;
 - (2) a second diamine substituted toluene having amine groups, wherein said first diamine substituted toluene has greater hindrance of its amine group than said second substituted toluene diamine's amine group;

wherein said mixture has a pot life of about 55 to 70 seconds, and cures in about 8 to 16 hours at a temperature of about 72F to 102F degrees.

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Claim 55. (previously presented) A golf ball comprising:

- a core having a diameter of about 1.48" to 1.62";
- a polyurethane cover comprising
 - (a) a prepolymer comprising
 - (1) a diisocyanate;
 - (2) a polyol;
 - (b) a curing agent blend consisting essentially of
 - (1) diethyl-2,4-toluenediamine; and,
 - (2) an unhindered diamine.

Claim 56. (previously presented) The golf ball according to claim 55, wherein the polyurethane cover cures in about 8 to 16 hours at a temperature of 72F to 102F degrees.

Claim 57. (previously presented) The golf ball according to claim 55, wherein the polyurethane cover further comprises titanium dioxide, UV stabilizer and optical brighteners.

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Claim 58. (previously presented) A golf ball comprising:

a core;

a cover comprising a blend of:

a polyurethane produced in a one-shot process
comprising:

(1) a diisocyanate having a benzene ring group;

(2) an ether glycol polyol;

(3) a curing agent blend comprising:

a polyol; and,

an unhindered diamine;

wherein the polyurethane is cured at about 72° F to about
102°F, and a post-cure time for the golf ball is between
about 8 to 16 hours.